

WHAT IS CLAIMED IS:

1. A photovoltaic power generating apparatus comprising:

5 a single solar cell element formed on a substrate; and

a plurality of power conversion devices individually connected to the solar cell element for converting an output of the solar cell element.

10 2. The apparatus according to claim 1, wherein the plurality of power conversion devices are DC-DC converters for boosting a DC voltage output from the solar cell element.

15 3. The apparatus according to claim 1, wherein the plurality of power conversion devices are inverters.

20 4. The apparatus according to claim 1, wherein a wiring member that electrically connects the solar cell element and the power conversion device has an exposed section at least at a part of a live part.

25 5. The apparatus according to claim 1, wherein the solar cell element comprises a photoelectric conversion layer, a current collection electrode disposed on a light-receiving side of the

photoelectric conversion layer, a surface wiring member and a transparent thin film resin layer, and at least a part of the current collection electrode or the surface wiring member has an exposed section 5 which is not covered with the transparent thin film resin layer.

6. The apparatus according to claim 1, wherein the photoelectric conversion layer comprises thin 10 film silicon.

7. The apparatus according to claim 1, wherein the substrate is conductive and a substrate side of the photoelectric conversion layer constitutes a 15 positive electrode.

8. The apparatus according to claim 1, wherein the substrate is conductive and one of outputs of the solar cell element and one of outputs of the DC-DC 20 converter are electrically connected to the substrate.

9. The apparatus according to claim 1, wherein one of outputs of the solar cell element and one of outputs of the DC-DC converter are on a low voltage 25 side.

10. The apparatus according to claim 1, wherein

one of outputs of the solar cell element and one of outputs of the DC-DC converter are on a high voltage side.

5 11. The apparatus according to claim 1, wherein the solar cell element has portions where no power generation section is formed on two peripheral sides thereof.

10 12. The apparatus according to claim 11, wherein the solar cell element is fixed to a support through the portion where no power generation section is formed.

15 13. The apparatus according to claim 1, wherein the solar cell element or the photovoltaic power generating apparatus itself is sealed with a resin.

20 14. The apparatus according to claim 1, wherein the solar cell element is a minimum power generation unit having a function as a solar cell.

25 15. The apparatus according to claim 14, further comprising a plurality of current collection electrodes for individually collecting power of the solar cell element, wherein each of the plurality of current collection electrodes is connected to one of

the plurality of power conversion devices such that power individually collected by the plurality of current collection electrodes is converted individually.

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16. A photovoltaic power generating system comprising:

a photovoltaic power generating apparatus comprising a single solar cell element formed on a 10 substrate and a plurality of DC-DC converters individually connected to the solar cell element for converting an DC output of the solar cell element; and

15 an inverter for converting outputs of the plurality of DC-DC converters to AC power and supplying the AC power to a load or interconnecting the AC power to a commercial power system.

17. The system according to claim 16, wherein 20 the inverter has an insulating transformer, and wherein a wiring member connecting the DC-DC converter and the inverter is grounded.

18. A photovoltaic power generating system 25 comprising a photovoltaic power generating apparatus comprising a single solar cell element formed on a substrate and a plurality of inverters individually

connected to the solar cell element for converting outputs of the solar cell element to AC power, wherein the plurality of inverters supply output power to a load or interconnect the output power with 5 a commercial power system.

19. A method of producing a photovoltaic power generating apparatus comprising the steps of:
10 forming a solar cell element on a substrate through a semiconductor producing step; and connecting a plurality of power conversion devices to predetermined portions of the solar cell element.

15 20. The method according to claim 19, comprising forming a photoelectric conversion layer, a current collection electrode and a surface wiring member on the substrate successively to form the solar cell element and connecting the power conversion devices to predetermined portions of the 20 solar cell element successively.